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[Claim 11] The storage with which the program code for making the function made to log out of said server when are used in a computer and the function make a timer means start time amount measurement, and the time amount measured with said timer means reach during a log in to a server at the predetermined setup time, after access to this server is completed perform to said computer was memorized in the format in which the readout of said computer is possible.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the client and server which were connected to the communication line.

[0002]

[Description of the Prior Art] With the terminal unit (terminal) connected to the conventional communication line, and server equipment, the number of the terminals by which communication link connection is made at once with server equipment rather than the number of the terminals generally installed physically is restricted few, and is set up. For example, even if the number of the terminals in which the communication link connection with one server equipment is possible is 100, it is limited to 40 sets that it can log in to coincidence with the server equipment. This is because the quantity of the terminal used for coincidence was assumed from login time with the server equipment which the terminal averaged, the total login time for one month, etc., the allowances of extent in the quantity were given and the capacity of a communication line, and the count capacity or log in capacity by the side of server equipment is generally determined. Moreover, if 100 sets of those terminals tend to make a server equipment side correspond possible [a log in] to 100 sets of terminals The plant-and-equipment investment amount of money and maintenance costs by the side of the server equipment for it become a large sum far compared with the case where the log in of a 40-set terminal is enabled. Since the activity ratio of each terminal per time amount falls and it becomes the bad system of a cost performance, the number of terminals which can log in to server equipment at coincidence rather than the number of terminals generally connected to the communication line actually is set up low.

[0003]

[Problem(s) to be Solved by the Invention] although the capacity by the side of server equipment is determined based on an average value or the data which totaled, since it is not individual, the operating frequency of each terminal does not change uniquely for the sake of each user's convenience and the operating frequency of each terminal is not necessarily managed when it actually logs in to server equipment using a terminal, the

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time zone which boils occasionally, carries out and use of a terminal concentrates occurs as mentioned above. For example, in the case of the data output at the times of concentration of an input, and problem generating, such as a check of the electronic mail addressed to itself, a closing date, and a bundle day, etc., a log in demand can concentrate [log in hope with the server equipment by the side of a terminal] exceeding the capacity of server equipment. [immediately after morning going to office] In such a case, the approach only had waiting to deny [log in] him from server equipment, even if the user of the terminal tried in order to log in to server equipment afterwards is the case where he wants to log in to server equipment immediately, and for a log in to become possible.

[0004] If a log in to the server equipment of a terminal is never necessarily possible as mentioned above [others / in the case of being left by the terminal as a seat is removed, or other urgent work enters and it does not log out during a log in without chance or any other intention] For example, since it will require time amount before it can log in to a degree, once the time amount which a log in concentrates logs out of server equipment, It may be left as the terminal was made the log in intentionally because of the log in of the following business, even if it finished one business. When such and the number of the terminal to which server equipment logs in has turned into more than the predetermined number already defined beforehand The situation where it cannot but wait until it logs in and a log in becomes possible also as a way has generated the user of the terminal which was going to log in immediately at another terminal later.

[0005] The technical problem of this invention enables the log out of the terminal left so that the log in for urgent might be possible, when the log out of a terminal has been forgotten and left carelessly and it is such left, logged in a terminal intentionally.

[0006]

[Means for Solving the Problem] A client logs in to server equipment and accesses this invention to the client and server equipment. If the access is completed, will begin measurement with a timer means, and if the above-mentioned client accesses again to the above-mentioned server equipment during the timer measurement, the above-mentioned timer means will be reset. If the measurement value of the above-mentioned timer means reaches the 1st setup time while the above-mentioned client has not accessed again to the above-mentioned server equipment, it will be characterized by making the above-mentioned client log out.

[0007] According to this invention, the terminal which logged in to server equipment Since it logs out when reaching the time amount to which elapsed time was set while the elapsed time from access termination of server equipment and each terminal was separately measured by the timer and there had been no next access When there is a user who is continuing the log on intentionally, without performing the case where the user of a terminal forgets a log off carelessly, and access, with server equipment, it is lost that an urgent new log on candidate cannot log on.

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[0008]

[Embodiment of the Invention] The example of this invention is explained referring to a drawing below. Drawing 1 is drawing showing the whole system configuration of the example of this invention. The network 3 connects with two or more client computers 2, and the server computer (server equipment) 1 of drawing 1 performs various processings, such as storage of data, and computation or management of an electronic mail. Although a client computer (client) 2 functions as an input/output terminal by the side of a user to the server computer 1, also in itself, it has a function as the personal computer and workstation of a stand-alone. Although this drawing 1 shows the relation between a common server computer and a client computer, also in this invention, such a configuration is the same.

[0009] Drawing 2 is drawing showing the internal configuration of the server computer 1 of this invention, or a client computer 2. CPU11 is a central processing unit which controls the client computer 2 or server computer 1 whole.

[0010] An input device 15 is equipment for consisting of a keyboard, a mouse, etc. and performing the log in or log out to the server computer 1, the alphabetic character input for electronic mail creation, selection directions of a command, etc.

[0011] An indicating equipment 12 is a display which displays data, such as a processing result sent through a network 3 from the current operating state and the current contents of an input of the client computer 2, and the server computer 1, etc.

[0012] RAM16 is memory which memorizes temporarily the operating state and the contents of an input of the above-mentioned computers 1 and 2, data, or an application program. Transmission and reception of other client computers 2 and server computers 1 which connected the communication controller 17 with the above-mentioned network 3, and were connected to this network 3, a data, an electronic mail, etc., etc. are performed.

[0013] A network 3 may be LAN (local area network) by the permanent communication line network, WAN (Wide Area Network), or a public communication channel network.

[0014] When it measured and logs out of the time amount from the last access with each server computer 1 every client computer 2, a timer 13 is used in order to measure the time amount from the log out, and interrupts to CPU11 with a predetermined time interval.

[0015] The store 14 had the storage 14-1 which consists of ROM, RAM, a flash memory, an HDD (hard disk drive) store, etc., and this storage 14-1 has remembered the application program which realizes the function of the server computer 1 of this operation gestalt, or a client computer 2 at least to be OS (operating system) used for the various control by CPU11.

[0016] Moreover, as for the storage 14-1 formed in storage 14, the thing of a portable mold is also contained. The storage 14-1 has memorized the application program which realizes the function of the server computer 1 of this operation gestalt, or a client

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computer 2 at least by the storage control section in storage 14 (un-illustrating) etc. in the format which can be read and which can be performed by CPU11.

[0017] Moreover, FD (floppy disk), MO (magneto-optic disk), CD-ROM, the memory card, DVD, etc. could constitute the storage 14-1, and it has memorized the above-mentioned application program etc. magnetically, optically, or electrically.

[0018] Moreover, the above-mentioned application program could be downloaded from the server computer 1 through the network 3 with above-mentioned CCE 17. In this case, the application program which carried out [above-mentioned] download is memorized to the storage 14-1 of the above-mentioned storage 14, and you may make it use for it. Or the program code of the above-mentioned application program memorized by it may be used from the server computer 1 grade of the connection place through above-mentioned CCE 17, receiving on-line if needed.

[0019] Drawing 3 shows the configuration of the storage part for management of each client computer in this operation gestalt in the server computer 1, and the storage part of the conventional time used for the log out judging of this example.

[0020] The storage part of this Fig. is prepared for example, in RAM16 grade. The client management memory 20 memorizes the sequence that the time of day when each client computer performed the last access with a server computer and the idle time which omits access by it are long, and explains this client management memory 20 in more detail using drawing 4 mentioned later.

[0021] When the non-accessing conventional-time memory 21 serves as time amount the value which shows the limit of the idle time of each above-mentioned client computer 2 by the side of the server computer 1 is remembered to be, and the idle time measured by the timer 13 mentioned later was remembered to be by this memory 21, it is for logging out of the client computer 2 concerned.

[0022] Drawing 4 is drawing showing the configuration of the above-mentioned client management memory 20 of drawing 3 in more detail. The memory data 31 of the client computer 2 of client No.1 memorize 14:30 21 seconds which is the last access time of day with the last server computer 1, and in five sets of the client computers 2 with which that time of day was displayed on this drawing 4 , since it is the time amount near current time, the ranking of the idle time is 4 the 2nd.

[0023] Next, the memory data 34 of the client computer 2 of client No.4 memorize 3:01 00 seconds which is the last access time of day with the last server computer 1, and in five sets of the client computers 2 with which that time of day was displayed on this drawing 4 , since it is the furthest time amount from current time, the ranking of the idle time is 1.

[0024] Similarly, also about the memory data 32, 33, and 35 of the client computer 2 of client No.2, and 3 and 5, at least the last access time and idle time order are memorized, and whenever it reaches the time amount by which the idle time is set as the non-accessing conventional-time memory 21 of drawing 3 , it will log out of the high

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client computer 2 like idle time order.

[0025] Drawing 5 shows the configuration of the storage region established in RAM16 or storage 14 used for self-control of the log in of each client computer 2 in this operation gestalt, and a log out.

[0026] The setup-time storage section A41 is a storage region where the conventional time (setup time A) used for the log out judging of this example is set up. The setup-time storage section B42 is a storage region where the conventional time (setup time B) used for the judgment which logs in again after the log out of this example is set up.

[0027] A timer A43 is a storage region for memorizing the total chronaxie measured by CPU11 and memorizing the elapsed time from the last access with the server computer 1 by interruption from the timer 13 of drawing 2.

[0028] A timer B44 is a storage region which memorizes the total chronaxie measured by CPU11 by interruption from the timer 13 of drawing 2 like the above-mentioned timer A, and is for memorizing the elapsed time after a client computer 2 logs out of the server computer 1.

[0029] A flag 45 is for being shown in distinction from a log out according [the client computer 2] not the log out input from a user but that it is in the condition under log out automatically to the usual user when a client computer 2 logs out, and if it passes to time amount equal to the above-mentioned setup time B by the timer after auto-logout, when carrying out the log in return of this client computer 2, it serves as the mark.

[0030] Drawing 6 is a flow chart explaining processing of the 1st example of this invention in a client computer 2. In addition, the program for realizing each function described by the flow chart of this flow chart and drawing 7 mentioned later, drawing 8, drawing 9, and drawing 10 is memorized by the storage 14-1 with the gestalt of the program code which CPU11 can read.

[0031] Network monitor processing shown in drawing 6 by CPU11 is performed by interruption from the timer 13 illustrated by the midst to which the client computer 2 is processing something at drawing 2.

[0032] When not distinguished and (step S1) logged in [whether the client computer 2 logs in with the server computer 1 first, and] (steps S1 and NO), it progresses to return processing (step S8) of a log in, and when logged in (steps S1 and YES), it distinguishes whether it is among an idle (step S2).

[0033] Although the value of the setup time of (steps S1 and YES) and a timer A43 is made to count up in in an idle (step S3), since I hear that the client computer 2 is not started when it is not among an idle, a timer A43 is reset (step S7).

[0034] Although it will return to the original processing before interruption if the setup time of a timer A43 is counted up (step S3), and it distinguishes whether the setup time of this timer A43 exceeded the setup time A (step S4) and is not over the setup time (step S4, NO) A flag 45 is turned on in order to show that performed log out processing (step S5), and then log out processing was performed automatically, when it judges with

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it being over the installation time amount A (step S4, YES) (step S6).

[0035] The setup time of a timer A42 is reset after the log out processing (step S7), a degree is interrupted, and it returns to the pre- original processing. Thus, it logs out of the client computer 2 with which the setup time A set as the setup-time storage section A41 after the last access with the server computer 1 passed by its judgment.

[0036] Drawing 7 is a flow chart in a client computer 2 which explains log in return processing (step S9) of drawing 6 in more detail. In not being under log in by the check (step S1) of whether drawing 6 is logging in, CPU11 performs this log in return processing (step S8). In this log in return processing, in order to first know whether it is in the log out condition according whether it is in the auto-logout condition by step S5 of drawing 6 to it and other reasons, it distinguishes whether the flag 45 is turned on (step S11).

[0037] If the flag 45 is not set as ON (steps S11 and NO), since it is not in the auto-logout condition by the above-mentioned step S5, the setup time of Timer B is reset, processing (step S17) is ended, but since it is in the auto-logout condition by the above-mentioned step S5 when the flag 45 is set as ON, the setup time of a timer B43 is counted up (step S12).

[0038] After counting up the setup time of a timer B43 (step S12), The setup time of a timer B43 distinguishes whether it went through the setup time B set as the setup-time storage section B42 (step S13). When having not gone through the setup time B (steps S13 and NO), the setup time of a timer B43 is reset and processing (step S17) is ended, but when having gone through beyond the setup time B, it judges whether it can log in (step S14).

[0039] Although it is going to log in at a client computer 2 side at this step S14 Since a log in is unreceivable in the server computer 1 side Although a flag 45 is left as it is, the setup time B of a timer B43 is reset (step S17) and processing is ended when the check of whether to be able to log in is performed and it is not able to log in by the refusal by the side of the server computer 1 etc. (steps S14 and NO) When a log in is O.K. (steps S14 and YES), log in processing is performed (step S15), a flag is turned off (step S16), the setup time B of a timer is reset, and processing (step S17) is ended.

[0040] Drawing 8 is a flow chart which shows monitor processing of the alter operation of a client computer 2 under log out in the 1st example of this invention in a client computer 2.

[0041] When log out processing is automatically performed by the client computer 2 at step S5 of drawing 6 , and alter operation is performed by that client computer 2 after that, this alter operation monitor processing is performed so that log in processing may be performed automatically.

[0042] the case (steps S21 and NO) where it distinguishes first whether alter operation was performed in this alter operation monitor processing (step S21), and there is no alter operation -- the original display processing -- returning (step S26) -- when alter

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operation occurs, it distinguishes whether (steps S21 and YES) and a flag 45 are set as ON (step S22).

[0043] and when the flag 45 is not set as ON, it returns to (steps S22 and NO) and the original display processing -- it is (step S26) -- although -- when a flag 45 is ON, (steps S22 and YES) and a log in are possible -- that judgment is performed (step S23).

[0044] Although the check of log in O.K. is performed like the case of step S14 of above-mentioned drawing 7 also in this step 23 since a log in may be refused on account of the server computer 1 side Although it returns to the original display processing when a log in is impossible (steps S23 and NO) (step S26) When it is able to log in (steps S23 and YES), log in processing is performed (step S24), a flag 45 is turned off (step S25), and it returns to the original display processing (step S26).

[0045] Drawing 9 is a flow chart in a client computer 2 which shows the 2nd example of this invention. Network monitor processing of the 2nd example of this invention is started by the interruption processing by the timer 13 shown in drawing 2 like the case of drawing 6.

[0046] In this 2nd example, it distinguishes whether the application (the server computer 1 is accessed) (registration application) corresponding to the network 3 registered beforehand is first started within the client computer 2 (step S31).

[0047] When it distinguishes whether it is logging in to (steps S31 and YES) and a degree when the above-mentioned registration application is starting (step S32), and it is under log in, it returns to the original processing before (steps S32 and YES) and interruption, but when not logged in, after performing (steps S32 and NO) and log in processing (step S33), it returns to the original processing.

[0048] On the other hand, when the above-mentioned registration application is not starting [be / it], it distinguishes [(steps S31 and NO) and] too whether it is under log in (SUTAPPU S34), when not logged in, it returns to the original processing before (steps S34 and NO) and interruption, but when it is under log in, after performing (steps S34 and YES) and log out processing (step S35), it returns to the original processing.

[0049] Thus, it logs out of the client computer 2 which the application which does not need to log in with the server computer 1 has started by its judgment.

[0050] Drawing 10 is a flow chart explaining processing of the example concerning this invention in the server computer 1 of this invention. The server computer 1 distinguishes first whether there is any demand of a log in from a client computer 2 (step S41).

[0051] Since there are not (steps S41 and NO) and the need of processing especially this example when there is no demand of a log in, the number of the client computers 2 which are carrying out the current log in in (steps S41 and YES) and the server computer 1 of those when there is a log in demand although it returns to step S41 distinguishes again whether the number of the maximum log ins is reached (step S42).

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[0052] And when the number of the maximum log ins is not reached (steps S42 and NO), compulsive log out processing is unnecessary and receives a log in (step S47). On the other hand, when the number of log ins has reached the maximum number, with reference to the client management memory 20, it checks whether (steps S42 and NO), next the client computer 2 which has not been accessed beyond predetermined time exist (step S43).

[0053] the case where there is no corresponding client computer 2 here -- (steps S44 and NO) and the client computer 2 which wishes to log in newly -- receiving -- a log in -- refusing (step S46) -- when there is a corresponding client computer 2, (steps S44 and YES) and the corresponding client computer 2 of those are made to log out (step S45), and the client computer 2 which has newly required the log in is made to log in (step S47)

[0054] Thus, when the client computer 2 with which beyond predetermined time has passed since the last access when a log in demand comes by the server computer 1 side from the client computer 2 new when the client computer 2 which logs in has reached the number of the maximum log ins exists, the client computer 2 can be made to log out compulsorily, and a new log in demand can be accepted now.

[0055] In addition, although the above-mentioned example showed the example which applied this invention to the client server system which consists of a server and two or more clients, this invention is not limited to this and can be applied also to the system which consists of a mainframe and two or more terminals.

[0056]

[Effect of the Invention] According to this invention, the number of the client computer (terminal) which logs in to a server computer conventionally Although the log in demand had to be refused even if there was a client computer which wishes to log in newly when the maximum number beforehand set up by the system was reached Since according to this invention those who have forgotten the log out carelessly, and those who are continuing the log in are made to a log out in spite of not using it, the case where the user who wishes to log in is kept waiting can be reduced, and the whole network can be employed efficiently.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the whole example configuration of this invention.

[Drawing 2] It is the system configuration Fig. of the server computer in the example of this invention, and a client computer.

[Drawing 3] It is drawing explaining the configuration of the storage of the server computer of this example.

[Drawing 4] It is drawing explaining the configuration of the client management

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memory of drawing 3 .

[Drawing 5] It is drawing explaining the configuration of the storage of the client computer of the 1st example of this invention.

[Drawing 6] It is a flow chart explaining the network monitor processing in the client computer of the 1st example of this invention.

[Drawing 7] It is a flow chart explaining actuation of the log in return processing in the flow chart of drawing 6 .

[Drawing 8] It is a flow chart explaining the alter operation monitor processing in the client computer of the 1st example of this invention.

[Drawing 9] It is a flow chart explaining the network monitor processing in the client computer of the 2nd example of this invention.

[Drawing 10] It is a flow chart explaining actuation of the server computer of the example of this invention.

[Description of Notations]

1 Server Computer

2 Client Computer

3 Network

11 CPU

12 Display

13 Timer

14 Storage

14-1 Storage

15 Input Unit

16 RAM

17 Communication Controller

20 Client Management Memory

21 Non-Accessing Conventional-Time Memory

32, 33, 34, 35 About the last access time of day and idle time order of a client computer

41 Setup-Time Storage Section A

42 Setup-Time Storage Section B

43 Timer A

44 Timer B

45 Flag

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